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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,688	12/27/2001	Craig L. Schulz	42390.P13390	9350

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Charles K. Young
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Seventh Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025-1026

EXAMINER	
VU, PHUONG T	

ART UNIT	PAPER NUMBER
2841	

DATE MAILED: 03/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/033,688	SCHULZ ET AL.	
	Examiner	Art Unit	
	Phuong T. Vu	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 4,13-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al. (US 6,043,983). Regarding claim 1, the reference discloses what may be considered an integrated circuit package comprising a printed circuit board 16 having a ground ring comprising portions 30 connected to a ground plane of the printed circuit board, a nonmetal connector 34 attached to the circuit board within the ground ring, a metal casing comprising 20, 22 substantially enclosing the printed circuit board but not enclosing the non-metal connector, the metal casing having a metal lip along the outer edge of the flat middle section of 20 that makes physical and electrical contact with the ground ring of the printed circuit board. The recitation of the integrated circuit package in the preamble has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

Regarding claim 2, the metal casing comprising a first metal portion 20 that substantially covers a top surface of the printed circuit board, and a second metal portion 22 that substantially covers a bottom surface of the printed circuit board.

Regarding claim 4, the first metal portion makes electrical contact with a first perimeter ground ring on the top surface of the printed circuit board, the first perimeter ground ring substantially circling the top surface of the printed circuit board, the first perimeter ground being electrically coupled to the ground plane.

Regarding method claims 13-17, one would necessarily perform the recited method steps in the assembly of the apparatus rejected above.

3. The following is a slightly different and separate rejection of claim 2.

4. Claim 2 is rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al. (US 6,043,983). Regarding claim 2, the metal casing comprising a first metal portion 22 that substantially covers a top surface of the printed circuit board, and a second metal portion 20 that substantially covers a bottom surface of the printed circuit board.

5. Claims 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Pressler et al. (US 5,550,713). Regarding claim 7, the reference discloses a package which may be used in a transmitter comprising a printed circuit board 50 having a top surface 52 and a bottom surface 54, the top surface having a first perimeter ground ring 60, and the bottom surface having a second perimeter ground ring 56, the first perimeter ground ring substantially circling the top surface of the printed circuit board, the second perimeter ground ring substantially circling the bottom surface of the printed circuit board, a first metal casing 52 substantially covering the top surface of the printed circuit

board, the first metal casing being in electrical contact with the first perimeter ground ring, and a second metal casing 54 substantially covering the bottom surface of the printed circuit board, the second metal casing being in electrical contact with the second perimeter ground ring. The recitation of the transmitter in the preamble has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

Regarding claim 8, a plurality of vias 66 electrically couple the first perimeter ground ring with the second perimeter ground ring.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 6,043,983) in view of Krehbiel et al. (US 6,206,728B1). Regarding claim 3, the Taylor reference does not teach that the second metal portion 20 comprises a heat sink having a plurality of fins. However, Krehbiel discloses a package 10 comprising a printed circuit board 14 with a nonmetal connector 16 attached to the printed circuit board, and a metal casing 12, 18 enclosing the printed circuit board where the casing

portion 12 comprises a heat sink having a plurality of fins to provide cooling for the printed circuit board. The Krehbiel reference is relied upon solely for this teaching. It would have been obvious to those skilled in the art at the time the invention was made to provide a heat sink with a plurality of fins on the second metal portion for providing cooling to the circuit board as taught by Krehbiel.

8. Claim 5-12, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 6,043,983). Regarding claim 5, the Taylor reference does not teach that the second metal portion 22 makes electrical contact with a second perimeter ground ring on the bottom surface of the printed circuit board, the second perimeter ground ring substantially circling the bottom surface of the printed circuit board, the second perimeter ground ring being electrically coupled to the ground plane. However, it would have been obvious to those skilled in the art at the time the invention was made that the printed circuit board may provide a double sided mounting of components and correspondingly would provide a second perimeter ground ring substantially circling the bottom surface of the printed circuit board, the second perimeter ground ring electrically coupled to the ground plane to expand the functionality to the printed circuit board. Use of such double-sided printed circuit boards is expedient in the art.

Regarding claim 6, in the above-mentioned configuration, the first perimeter ground ring would be coupled to the second perimeter ground ring by a plurality of vias spaced around the first and second perimeter ground rings.

Regarding claims 7-10, please refer to the above rejection. The recitation of the transmitter in the preamble has not been given patentable weight because it has been

held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

Regarding claim 12, the second metal casing 22 at least partially overlaps a perimeter of the first metal casing 20.

Regarding claim 11, when the first metal casing part is referenced as 22 and the second metal casing part is referenced as 20, the first metal casing at least partially overlaps a perimeter pf the second metal casing.

Regarding method claims 18-19, one would necessarily perform the recited method steps in the assembly of the apparatus rejected above.

Response to Arguments

9. Applicant's arguments filed December 29,2003 have been fully considered but they are not persuasive. Regarding the 102 rejection of claims 1-2, 4, 13-17 in view of Taylor, Applicant states that the reference does not disclose a ground ring connected to a ground plane of the printed circuit board. However, it is taught in the reference that portions 30 are provided on the printed circuit board and are electrically connected to the ground plane of the printed circuit board. Even though the reference does not denote the portions 30 as a "ground ring", there is no requirement that the terminology used in the reference needs to be identical to the Applicant's terminology. The portions 30 collectively form a ring, which surrounds a perimeter of the top surface of the printed circuit board, and portions are electrically connected to the ground plane of the printed

circuit board. Furthermore, the portions 30 also make electrical contact with the metal casing. Therefore, it may be considered that the portions 30 collectively comprise the "ground ring".

Regarding the 102 rejection of claims 7-8 in view of Pressler, Applicant states that the rejection sets forth a "first perimeter ground ring 60" and a "second perimeter ground ring 60" and concludes that the same element 60 cannot be designated as both the first perimeter ground ring and the second perimeter ground ring. It is noted that the reference numeral 60 which was previously designated as the second perimeter ground ring was a typographical error and should have been designated as 56. Pressler describes both sides of the printed circuit board, each provided with ground traces and clearly depicts both sides of the printed circuit board, each with ground traces in figures 2 and 3. Regarding claim 8, Applicant states that Pressler does not disclose a plurality of vias 66 to "electrically couple the first perimeter ground ring to the second perimeter ground ring". However, it is stated in the reference that vias 66 are "throughbores plated conductive material which extend vertically from a surface to the grounding plate (column 4, lines 53-55)". It is also mentioned that "The ground traces 56, 58, 60, 62 connect to the ground plates through a plurality of conductive vias 66 (column 4, lines 51-53)".

Applicant's arguments regarding the 103 rejections of the claims are directed toward issues similar to those addressed above and therefor will not be repeated again here. Regarding the examiner's statement that use of double-sided printed circuit boards which provide a double sided mounting of components to expand the

functionality of a printed circuit board and which correspondingly provide first and second perimeter ground rings respectively circling the top and bottom surfaces of a printed circuit board is expedient in the art, it is noted that the cited reference, Pressler, teaches such a configuration.

Therefore, it is believed that each and every recited claim limitation has been fully met in the above rejection.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong T. Vu whose telephone number is (571) 272-2111. The examiner can normally be reached on Mon. & Tues., 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David S. Martin can be reached on (571) 272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PTVu
Patent Examiner
2/25/04